

Chapter 7.4

Biosafety and bloodborne pathogens

This could be you . . .

A janitor was stuck by a hypodermic needle left in a trash can.

An employee found blood drops around his work area.

1. Applicability of this chapter

You are required to follow this chapter if you work with, or may be exposed to, biohazards including blood and “other potentially infectious materials” as a part of your job. JSC has adopted the recommendations found in the Centers for Disease Control and Prevention and National Institutes of Health “Universal Precautions” and “Biosafety in Microbiological and Biomedical Laboratories” for controlling biohazards in the workplace. If you don’t work with blood or body fluids but find them in your work area, follow paragraph 2 below. If you are a supervisor, paragraph 20 lists your responsibilities for biohazards.

2. What to do if you discover blood or other potentially infectious body fluids

If you find blood or other potentially infectious body fluids around your work area, you shall:

- a. Leave it alone. Without the proper training and equipment, you risk getting a bloodborne disease.
- b. Block off the area to prevent others from contacting it.
- c. Report it to Emergency Operations Center Security Dispatcher at (281) 483-4658 and to your facility manager. They will send janitorial personnel trained in bloodborne pathogens to clean it up.
- d. If the incident is an emergency, call x33333, JSC’s emergency number.

3. Biohazards and bloodborne pathogens

The following definitions apply to this chapter:

- a. **Biological hazards or biohazards** are those infectious agents that present a risk of death, injury, or illness to employees. Bloodborne pathogens and other potentially infectious materials (subparagraphs b and c below) are considered biohazards.
- b. **Bloodborne pathogens** are pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV).

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c. ***Other potentially infectious materials*** is an OSHA definition that includes:

1. The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids.
2. Any unfixed tissue or organ (other than intact skin) from a human (living or dead).
3. HIV-containing cell or tissue cultures, organ cultures.
4. HIV- or HBV-containing culture medium or other solutions.
5. Blood, organs, or other tissues from experimental animals infected with HIV or HBV.

4. OSHA requirements for bloodborne pathogens

If your job description includes possible exposure to blood or “other potentially infectious materials,” you shall follow the OSHA 29 CFR 1910.1030, “Bloodborne Pathogens.”

5. How to determine whether you work in a job that exposes you to biohazards or bloodborne pathogens

- a. JSC Space and Life Sciences has a Biosafety Control Board that evaluates the use of any new potential biohazardous or pathogenic materials. The Biosafety Control Board periodically audits laboratories for safe handling of bloodborne pathogens and biological materials. Anyone, employees or visitors, who brings biohazard materials onto JSC or who plans to implement a process using biohazardous materials shall have approval from the Biosafety Control Board before use or implementation.
- b. The Clinic Services Branch evaluates all areas where civil service or contract workers could be exposed to bloodborne pathogens. Your management shall help in evaluating these areas.

6. Biosafety levels and precautions you must take for each

You shall never bring any biosafety level (BSL) 2 materials on site without the prior approval of the Biosafety Control Board. BSL 3 or 4 materials are prohibited on site.

You must classify all biohazards or biological materials as Biohazard 1, 2, 3, or 4. You must also follow the requirements in the table below for the biosafety level that matches the biohazard classification when working with any biohazardous material in a laboratory or clinical setting.

<i>BSL . . .</i>	<i>Involves these agents . . .</i>	<i>Follow these practices . . .</i>	<i>Use this safety equipment (primary barriers) . . .</i>	<i>Use these facilities (secondary barriers) . . .</i>
1	Not known to cause disease in healthy adults	Standard micro-biological practices	None required	Open bench-top sink required
2	Associated with human disease, hazard = auto-inoculation, ingestion, mucous membrane exposure	BSL 1 practice plus: Limited access; biohazard warning signs; “sharps” precautions; biosafety manual defining any needed waste decontamination or medical surveillance policies	Class I or II biosafety cabinets (BSCs) or other physical containment devices used for manipulating any agents that cause splashes or aerosols of infectious materials PPE: laboratory coats; gloves; face protection as needed	BSL-1 plus: Autoclave available
3	Indigenous or exotic agents with potential for aerosol transmission; disease may have serious or lethal consequences	BSL-2 practice plus: Controlled access; decontaminate all waste; decontaminate lab clothing before laundering; baseline serum	Class I or II BSCs or other physical containment devices used for manipulating any agents PPE: protective lab clothing; gloves; respiratory protection as needed	BSL-2 plus: Physical separation from access corridors; self-closing, double-door access; exhausted air not re-circulated; negative airflow into lab
4	Dangerous or exotic agents that pose a high risk of life-threatening disease, aerosol-transmitted lab infections; or related agents with unknown risk of transmission	BSL-3 practice plus: Change clothing before entering; shower on exit; decontaminate all material when exiting facility	Conduct all procedures in Class III BSCs or Class I or II BSCs with full-body, air-supplied, positive-pressure personnel suit	BSL-3 plus: Separate building or isolated zone; dedicated supply and exhaust, vacuum, and deconditioning systems; other requirements outlined in the test

7. Exposure control plan

Any organization or company whose employees may be exposed to blood and “other potentially infectious materials” needs to have a written exposure control plan that is tailored to the work area and designed to minimize worker exposure. The plan shall contain the items listed in 29 CFR 1910.1030(c) and include but not be limited to:

- Exposure determination and hazard analysis, which describe the occupation and tasks with exposure.
- Methods to comply with applicable requirements.
- Communicating hazards to exposed employees.

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- d. Recordkeeping.
- e. The procedures to follow after an exposure to blood or other infectious materials.
- f. Hepatitis B vaccination option.

You must update the written exposure control plan yearly.

8. Precautions to take when working with blood or other potentially infectious materials

If you work with any of the blood or body fluids listed above, you shall observe these “universal precautions: ”

- a. Treat all blood and body fluids as infectious. Urine, feces, saliva, breast milk, and vomit are not considered potentially infectious materials unless they are visibly contaminated with blood.
- b. Always wear appropriate PPE such as gloves, lab coats or aprons, and eye or face shields for the task at hand.
- c. Wash your hands with biocidal soap immediately after removing your PPE or coming in contact with blood or body fluids.
- d. Remove all PPE before leaving the work area and place in the appropriate container for storage, decontamination, or disposal.
- e. Don't eat, drink, smoke, apply cosmetics, or handle contact lenses in the work area.
- f. Don't store food and drink in refrigerators or freezers where blood or other infectious materials are stored.
- g. Minimize splashing and spraying blood or other infectious materials while handling them, while cleaning equipment, or during any other clean-up procedure.
- h. Don't pipet or suction with your mouth.
- i. Make sure all ventilation hoods and biological safety cabinets are inspected at least every year.

9. Precautions when using needles

If you use needles with blood or other infectious materials, you shall observe these precautions:

- a. Don't shear, bend, or break used needles.
- b. Don't recap or re-sheath by hand.
- c. Don't remove used needles from disposable syringes.
- d. Dispose of used needles in an approved biohazard container.

10. Housekeeping precautions

Housekeeping is an important part of your protection, so you shall observe these requirements:

- a. Disinfect all work surfaces with an appropriate biocide at the end of each work shift or when they are contaminated.
- b. Replace protective coverings, such as foil or plastic wrap used to protect equipment, at the end of the work shift or when they become contaminated.
- c. Disinfect all waste containers labeled biohazard on a regular schedule and clean them when they are visibly contaminated.
- d. Don't pick up broken glassware with your hands. Use tongs or a brush and dustpan. Dispose of broken glassware in a puncture-proof biohazard container so it won't injure other workers.
- e. Place all specimens in a closeable, leak-proof container and label the container before storing or transporting.
- f. Use a secondary container if the first container is likely to be damaged.

11. Disposal precautions

Disposal is an important part of protecting others, so you shall observe these requirements:

- a. Place all infectious waste in closeable, leak-proof containers that are color-coded or labeled as described in paragraph 12 below.
- b. Keep infectious waste separate from other waste.
- c. Wear protective gloves when handling infectious waste.
- d. Make sure that infectious waste is picked up and transported by trained personnel only and that it is disposed of in a biological incinerator. In emergencies, first responders may take properly bagged waste to the JSC Clinic for disposal during working hours.
- e. Minimize handling laundry that is contaminated. Bag it at the site in a properly labeled container and take it to a laundry for cleaning.

12. Labeling requirements for blood and body fluids

Labels shall be fluorescent orange or orange-red and include the word BIOHAZARD and the biohazard symbol in a contrasting color. Place this warning sign on all containers of infectious waste, and on refrigerators or freezers that contain infectious materials. You may use red bags or containers in addition to labels for containers of infectious waste.

13. Protective clothing and equipment to use when working with blood and potentially infectious materials

You shall wear the following protective equipment:

- a. Gloves, latex or another type if you are allergic to latex
- b. Lab coat or apron and eye and face protection if splashing or spraying is possible

14. Hepatitis B virus vaccination

The JSC Clinic provides HBV vaccine to all on-site contractor and civil service employees in the job classifications listed in the exposure control plan for your area, subject to the following:

- a. The Occupational Health Officer shall concur before you get the vaccine.
- b. The vaccine shall be offered to you at no cost within 10 working days of being assigned duties that could expose you to blood or other potentially infectious materials. You may decline this vaccine when it is offered by signing a declination form, which is available at the JSC Clinic. If you later change your mind, you can still get the vaccine from the JSC Clinic, still free of charge.

15. Training to work safely with blood and body fluids

You must be trained within 10 working days of being assigned duties that could expose you to blood or other potentially infectious materials and yearly thereafter to handle safely blood and body fluids listed in the “Universal Precautions” of the Centers for Disease Control and Prevention. Your training shall include:

- a. A copy of 29 CFR 1910.1030 and an explanation of its contents.
- b. A general explanation of the epidemiology, symptoms, and modes of transmission of bloodborne diseases.
- c. An explanation of how to recognize activities that may involve exposure to blood and other potentially infectious material.
- d. An explanation of the use and limitations of practices that will prevent or reduce exposure, including appropriate engineering controls, work practices, and PPE.
- e. Information on the types, selection, proper use, location, removal, handling, decontamination, or disposal of PPE.
- f. Information on the HBV vaccine, including information on its effectiveness, safety, the benefits of being vaccinated, and that the vaccination will be offered to you free of charge.
- g. Information on the appropriate actions to take and persons to contact if you or someone else is exposed to blood or body fluids.

- h. An explanation of the procedure to follow if an exposure incident occurs, including how to report the incident and the medical follow-up that will occur.
- i. Information on the post-exposure evaluation and follow-up that will be provided for you after an exposure incident.
- j. An explanation of the signs, labels, and the color-coding system.
- k. An opportunity to ask questions of the person conducting the training session. Training is available through the Clinic Services Branch.
- l. Information on the Centers for Disease Control Prevention's Communicable Hotline (1-800-342-2437) to receive personal, confidential, and reliable information.
- m. See Chapter 4.1, "Program Description" for safety and health training, of this handbook for more information on training.

16. What to do if you are exposed to blood or other infectious materials

If you are exposed to blood or body fluids, get medical treatment immediately. Getting proper treatment within 2 hours of exposure might prevent you from contracting a bloodborne disease. If you are treated at an outside medical facility, go to your site clinic as soon as possible for a follow-up visit. Follow the table below:

<i>If the exposure is . . .</i>	<i>Then . . .</i>
An emergency where you need an ambulance	<ul style="list-style-type: none"> • Call x33333 at JSC and the Sonny Carter Training Facility, x44444 at Ellington Field, 911 at any off-site location, or x5911 at White Sands Test Facility.
To the eye, mouth, other mucous membrane, or non-intact skin	<ul style="list-style-type: none"> • Flood the area with water for 15–20 minutes or wash with soap. • Go to the JSC Clinic or emergency room if the Clinic is closed for post-exposure follow-up.
To intact skin	<ul style="list-style-type: none"> • Immediately and thoroughly wash the affected area with biocidal soap. • Go to the JSC Clinic or emergency room if the Clinic is closed for post-exposure follow-up.

17. Clinic actions for exposure

For JSC employees, the JSC Clinic will provide a confidential medical evaluation to you if you have been exposed and will:

- a. Document the:
 1. Route(s) of exposure.
 2. HBV, HCV, and HIV antibody status of the source individual, if known.
 3. The circumstances under which the exposure occurred.

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4. Any “first-aid” or “prophylactic” measures that you received.
- b. Collect and test the source individual’s blood to determine the presence of HIV, HCV, or HBV infection, if the source individual can be identified and permission is given. You will be informed of applicable laws and regulations about disclosing the identity and infectious status of the source individual.
- c. Collect blood from you as soon as possible after the exposure incident to determine your HBV, Hepatitis C, and HIV antibody status.
- d. Follow up on you, including the following:
 1. Antibody or antigen testing
 2. Counseling
 3. Evaluation of reported illnesses
 4. Safe and effective post-exposure treatment under standard recommendations for medical practice

18.JSC medical records for bloodborne pathogens

The following govern JSC medical records for bloodborne pathogens:

- a. The JSC Clinic keeps all medical exposure records for the duration of your employment plus 30 years.
- b. These medical records are available to you and anyone with your written consent.
- c. You shall file an injury report (JSC Form 340) for any exposure. The Safety Office will send a copy to your supervisor or company.

19.For more information on biohazards and bloodborne pathogens

You can find more information on bloodborne pathogens in these documents or contact the JSC Clinic:

- a. 29 CFR 1910.1030
- b. “Universal Precautions” guidelines from the Centers for Disease Control and Prevention
- c. “Bio Safety in Microbiological and Bio medical Laboratories,” published by the Centers for Disease Control and Prevention and the National Institutes of Health

20.Responsibilities for bloodborne pathogen safety

As a *supervisor*, you are responsible for:

- a. Controlling all exposures to bloodborne pathogens through a written exposure control plan designed to minimize worker exposure.

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- b. Making sure your employees follow the requirements of this chapter and your exposure control plan.
- c. Making sure your employees are trained in protecting themselves from bloodborne pathogens.
- d. Providing adequate PPE.
- e. Offering to all employees the Hepatitis B vaccination and training within 10 working days of being assigned to a job in which they could be exposed.